

Utilizing Partnerships and Green Infrastructure to Restore Kids Creek



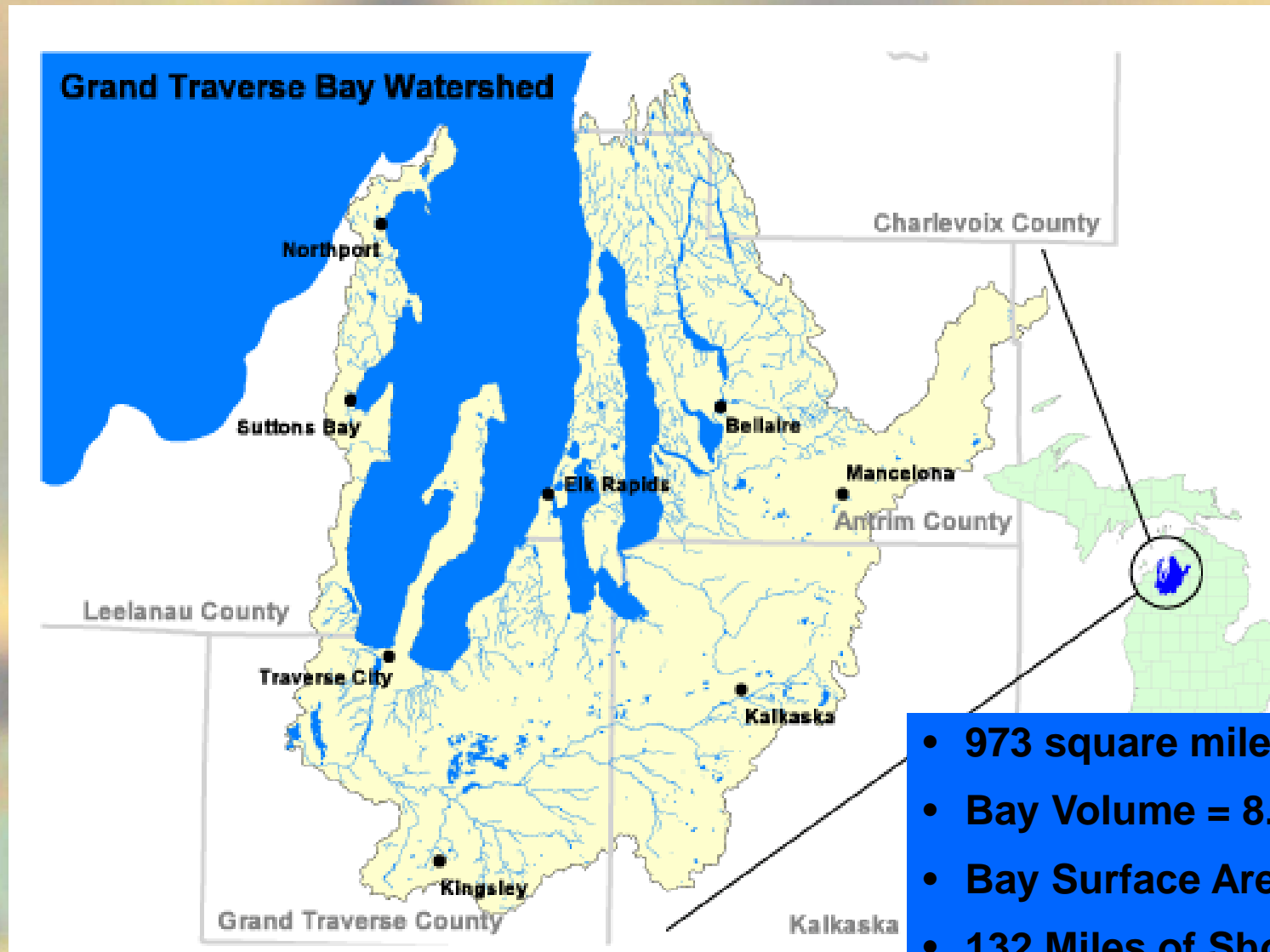
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Program Director
The Watershed Center of Grand Traverse Bay
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Our Mission:

The Watershed Center advocates for clean water in Grand Traverse Bay and acts to protect and preserve the Bay's watershed

Grand Traverse Bay Watershed

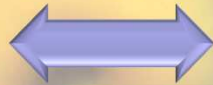


- 973 square miles
- Bay Volume = 8.97 mi³
- Bay Surface Area = 277 mi²
- 132 Miles of Shoreline
- 4 Counties, 44 townships, 11 municipalities

Quality of
Life



Health of Water
Resources



Local
Economy

**Water-related recreation and
tourism are key source of
economy in Grand Traverse
Region**

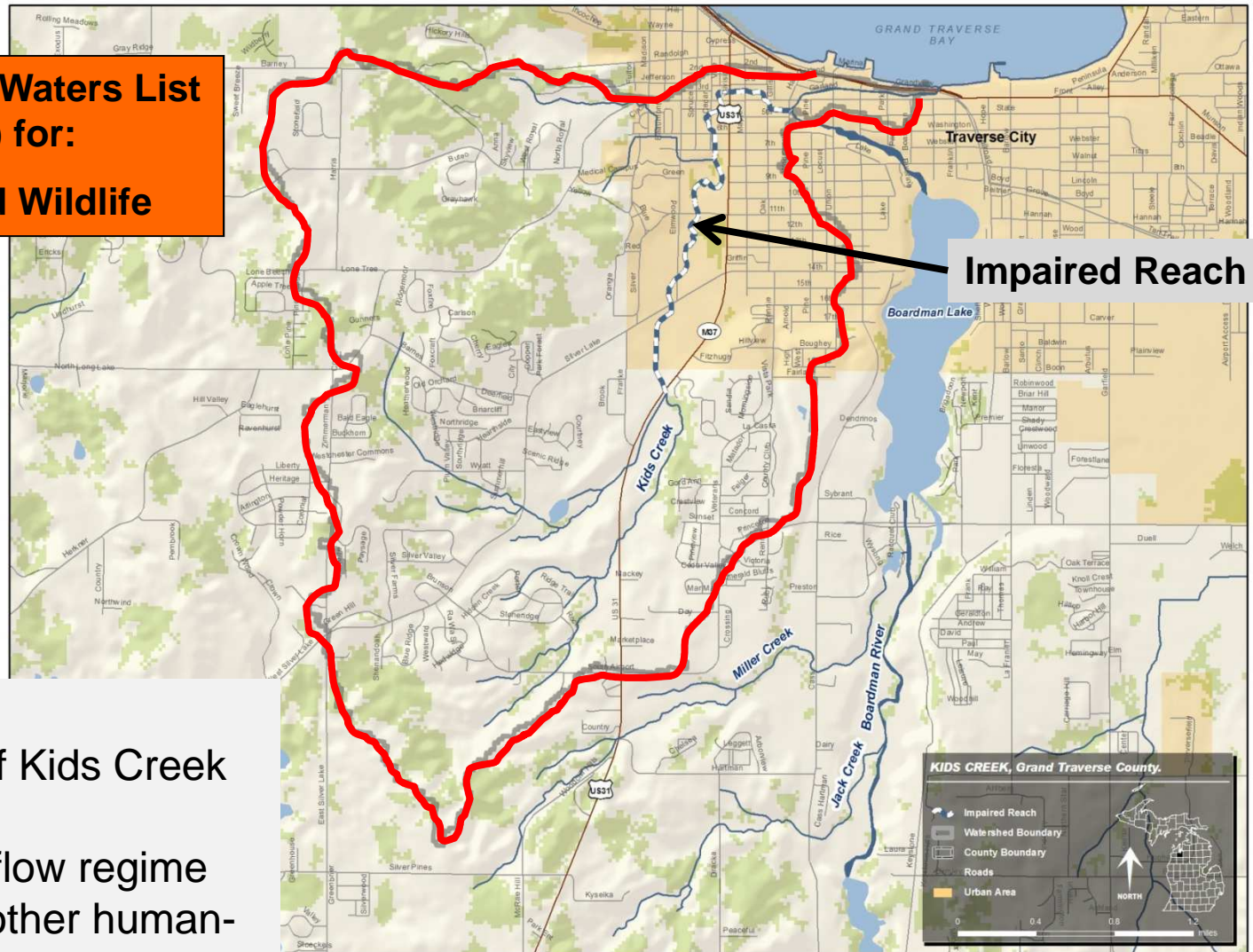


Kids Creek Subwatershed

On State Impaired Waters List
(303(d) List) for:
Aquatic Life and Wildlife

Issues:

- 2-mile portion of Kids Creek impaired due to sedimentation, flow regime alteration, and other human-caused sources – all of which relate to **stormwater**



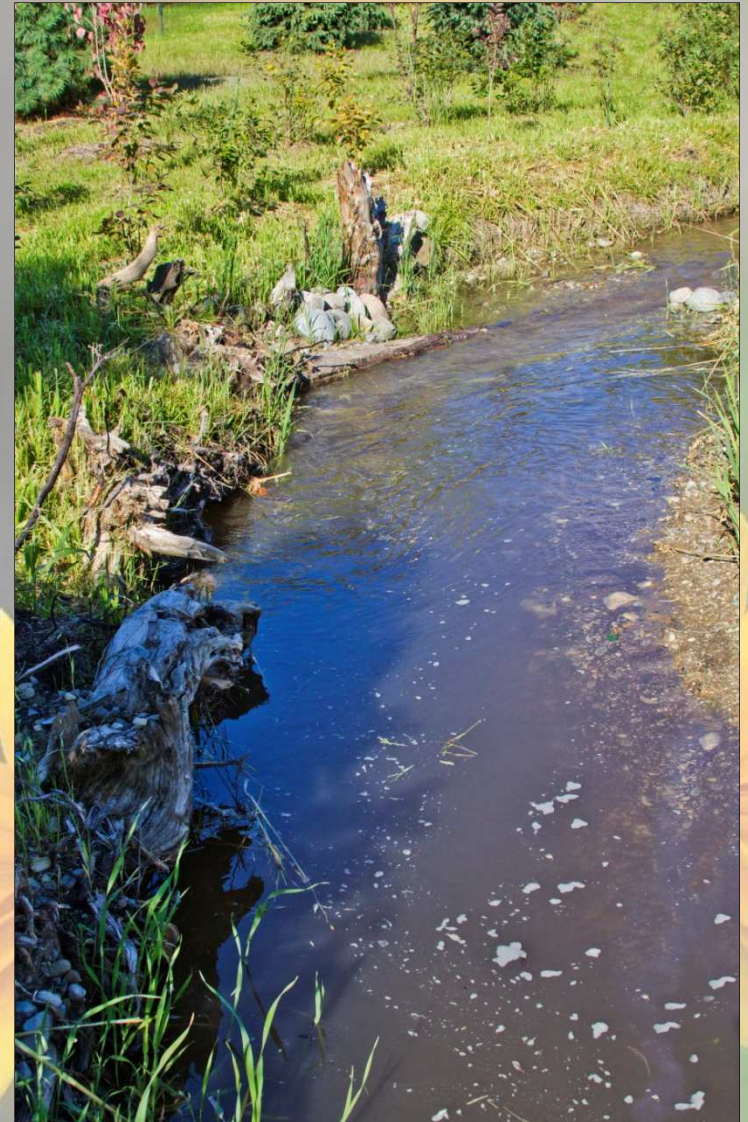
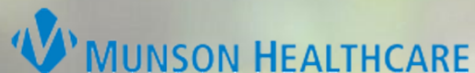
Kids Creek Restoration Project

Funds Raised: \$3.4 million

- State/Federal ~ \$2.5 million
- Private Grant: \$100K
- Foundations: \$65K
- Matching Funds (Private Businesses): \$750K

Key Partners:

- EPA, DEQ, DNR
- Local units of gov't – City of TC, Garfield Twp
- Grand Traverse Conservation District
- Munson Medical Center
- Village at Grand Traverse Commons
- Grand Traverse Pavilions (GT County)



Kids Creek Restoration Project

Activities Include:

- Stream Daylighting – riparian corridor, greenspace, floodplain development
- Low Impact Development (LID) installations
- Streambank stabilizations



--Kids Creek 'Daylighting'

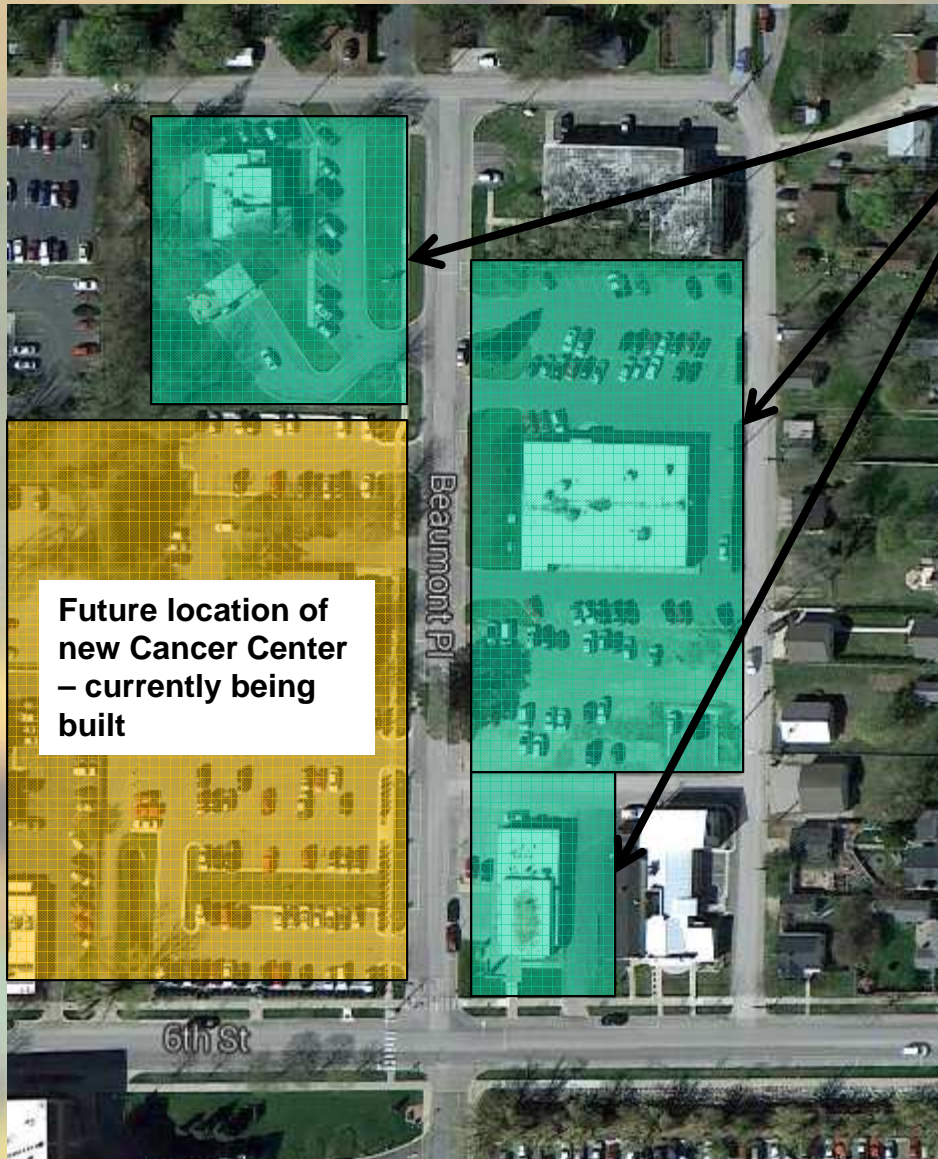
Tributary A Daylighting Project – Sept 2013:

- Relocated 900 feet of underground culverts and channelized ditches to a natural meandering channel that is 1,275 feet in length
- Eliminated 72,000 ft² of impervious surfaces
- Established a 15-30 foot wide riparian buffer and 27,000 ft² floodplain
- Ecological Benefits:
 - Improved fish passage
 - Enhanced wildlife/aquatic habitat

Conceptual drawing of new stream channel



--Kids Creek 'Daylighting'

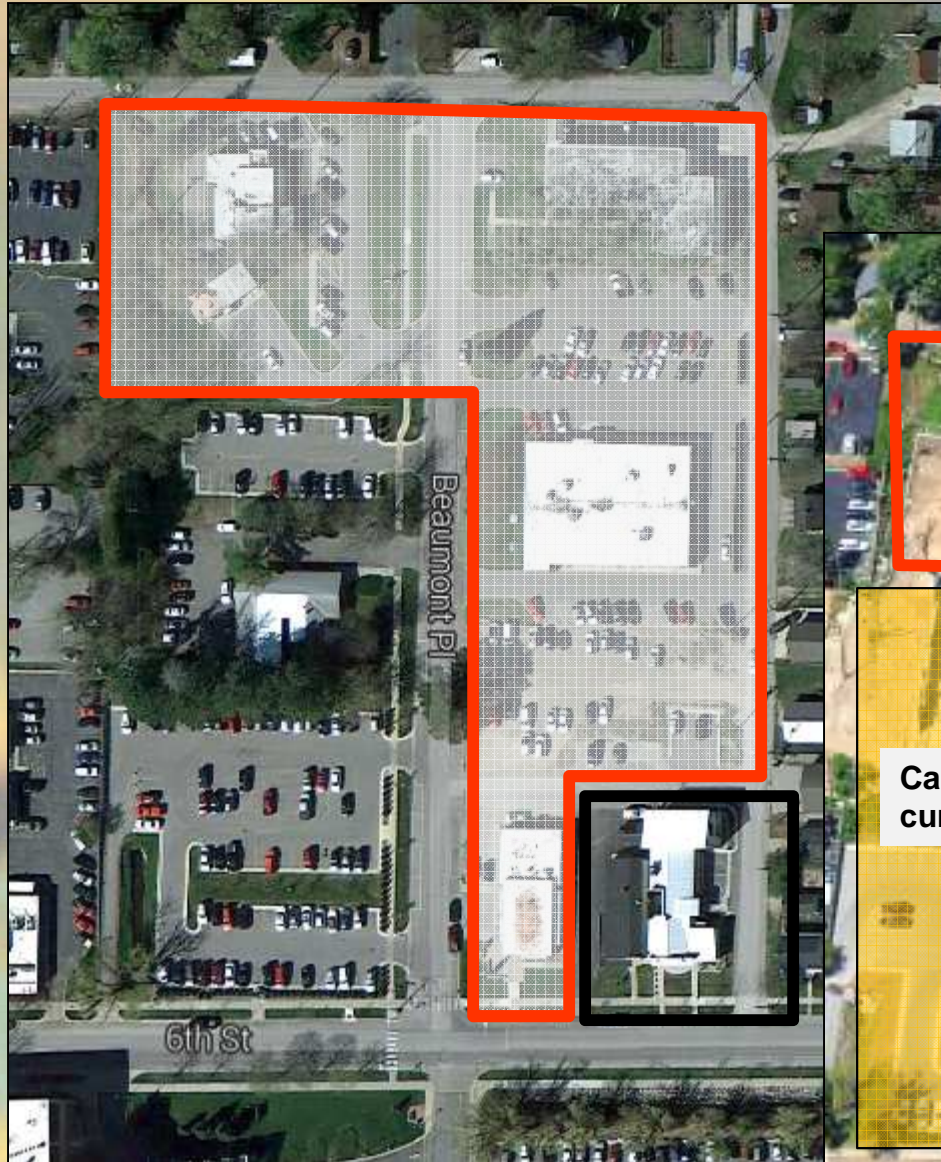


Google Map aerial view of 6th Street and Beaumont Place

Munson Medical Center (MMC) purchased these properties and demolished buildings to create the new stream channel

- **Total cost of Cancer Center project = \$45 million**
 - Land purchases and demolition
 - Stream daylighting
 - Cancer Center construction
- **Stream Daylighting ~ \$1.1 million**

--Kids Creek 'Daylighting'



Stream Daylighting ~ \$1.1 million



Left: Example of new stream section with root wads placed.

Right: Open bottom bridge structure placement on 6th Street.



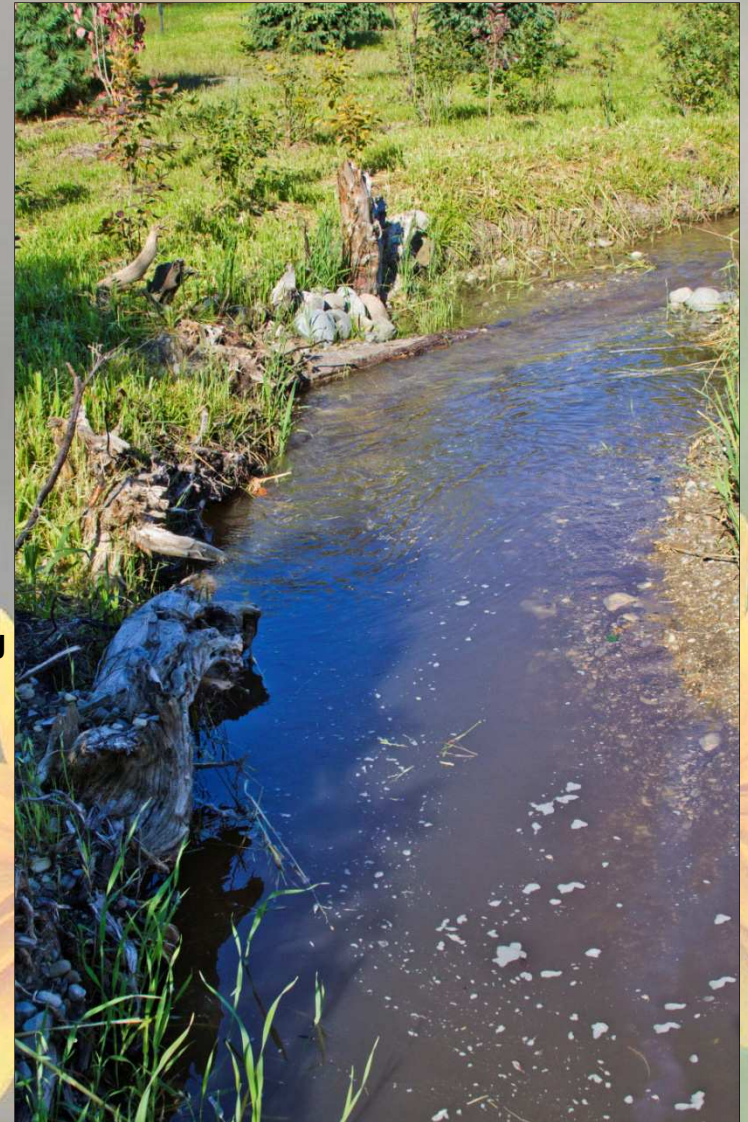


Top and Right: Vegetation planted along new stream section.





Left: Open bottom bridge structure placement on Beaumont Place



Right: New stream channel just after letting water in (west side of Beaumont Place crossing)

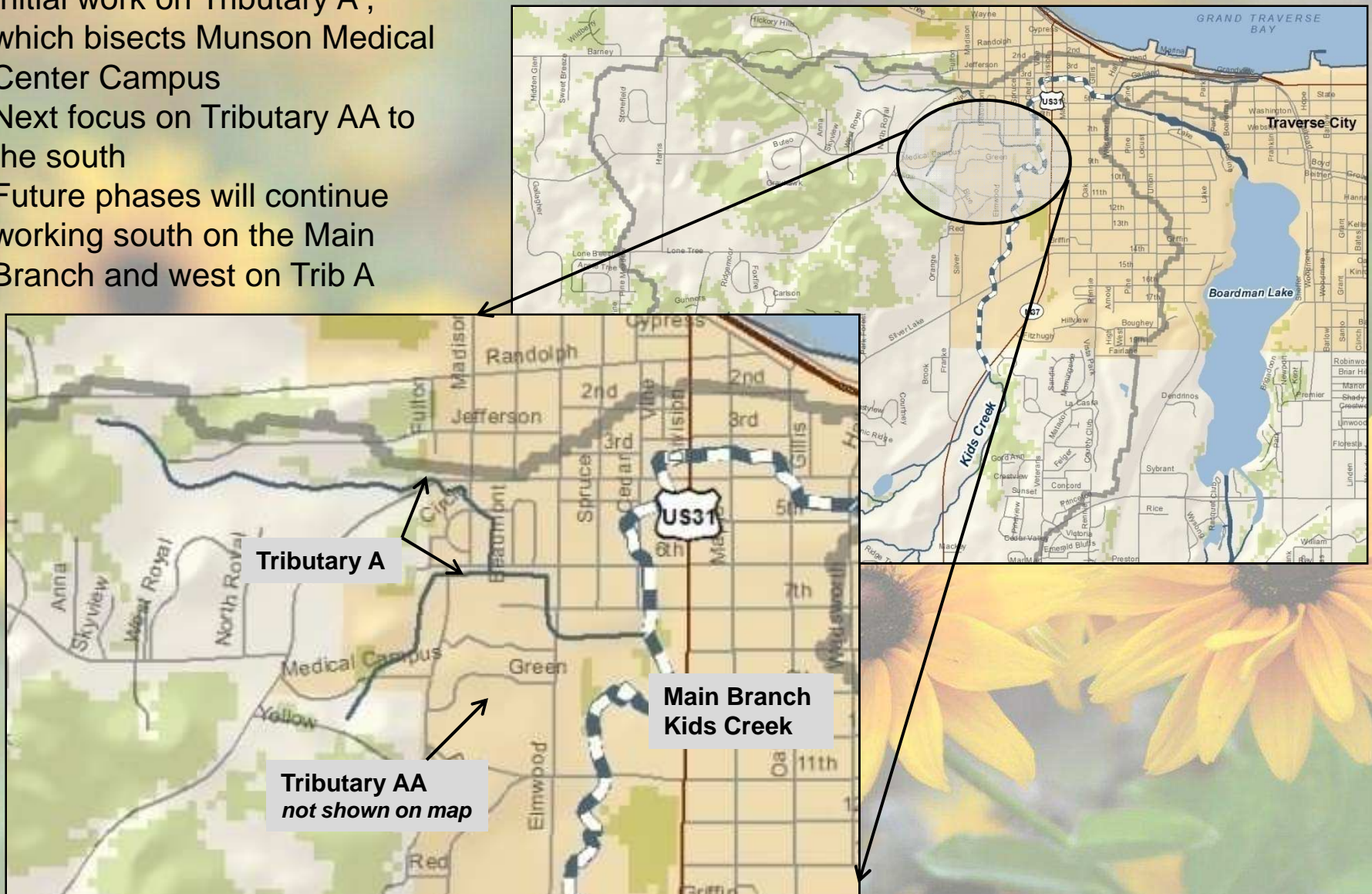
Below: Newly moved in and doing great



-- Low Impact Development Installations

Goal: Reduce sediment and stormwater inputs to Kids Creek

1. Initial work on Tributary A , which bisects Munson Medical Center Campus
2. Next focus on Tributary AA to the south
3. Future phases will continue working south on the Main Branch and west on Trib A



-- Low Impact Development Installations

Stormwater Reduction Work – Trib A:

- Developed Stormwater Management Plan for MMC Campus
- Focus on reducing stormwater inputs to Creek using green infrastructure/LID
 - Porous pavement
 - Rain gardens
 - Underground infiltration
 - Planter boxes
 - Constructed wetland
- Priority sites identified and located based on discussions with MMC
 - Willingness (do they want it)
 - Future expansion plans
 - Treatment Effectiveness
 - Maintenance
 - Cost

MMC STORMWATER MANAGEMENT PLAN



Draft 2

July 23, 2014

URS



Major Runoff event
MMC Campus – 2010

-- Low Impact Development Installations

Planned Sites on MMC Campus:

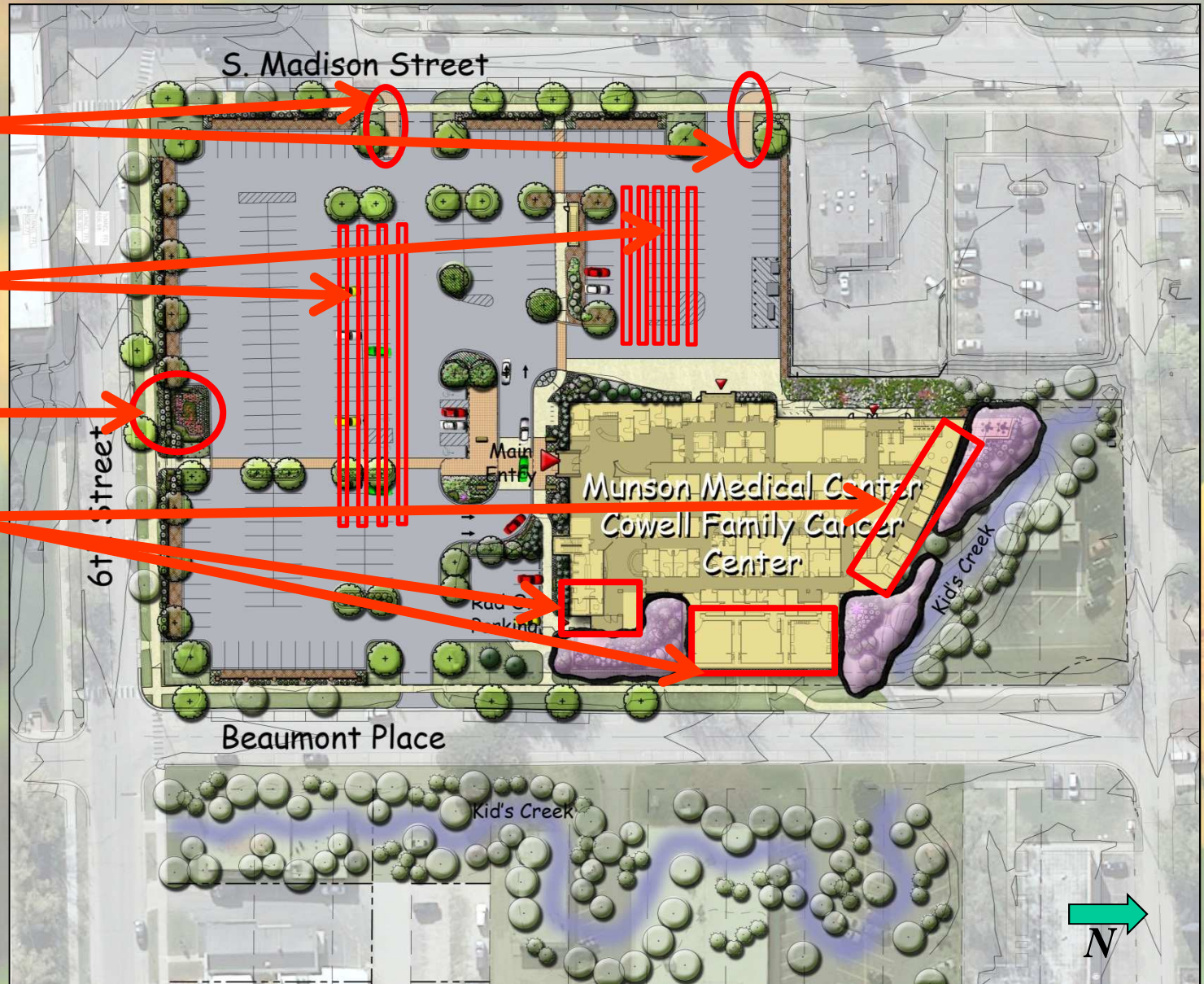
	Location	BMP Type
2014-5	MMC Cancer Center ★	Green roof, rain garden, underground infiltration trenches, pervious pavement
2016	MMC Main Building	Green roof
	MMC Main Patient Parking Lot	Pervious pavement
2015	MMC Building 29 ★	Planter boxes, pervious pavement, rain garden
2016	NW Quadrant of Elmwood Ave and Medical Campus Drive	Rain gardens, constructed wetlands
	MMC – vicinity north of intersection of Brook Street and Medical Campus Drive	Pervious pavement, roadside rain gardens, bioretention basins
	Elmwood Avenue and State Office Building Parking Lot	Rain garden



-- Low Impact Development Installations Cowell Family Cancer Center

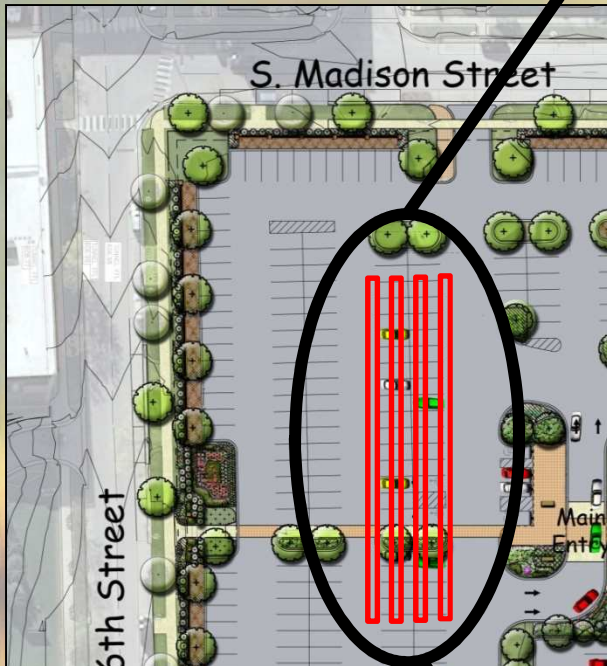
Cancer Center:

- Pervious pavement
- Underground infiltration trenches
- Rain garden
- Green roofs

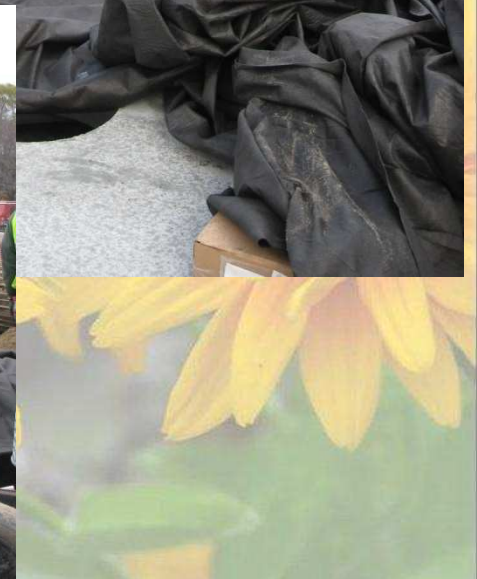


-- Low Impact Development Installations Cowell Family Cancer Center

Underground
infiltration trenches



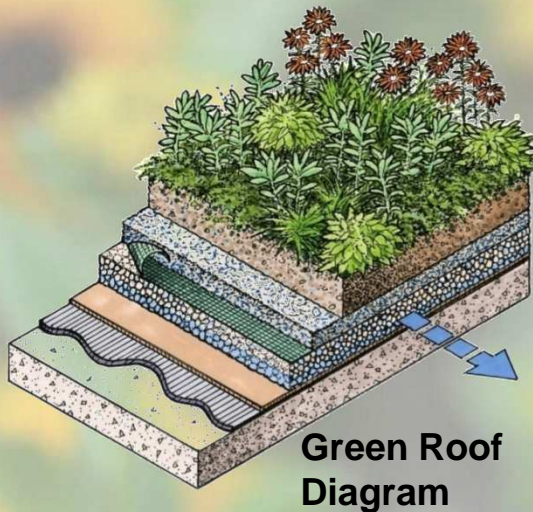
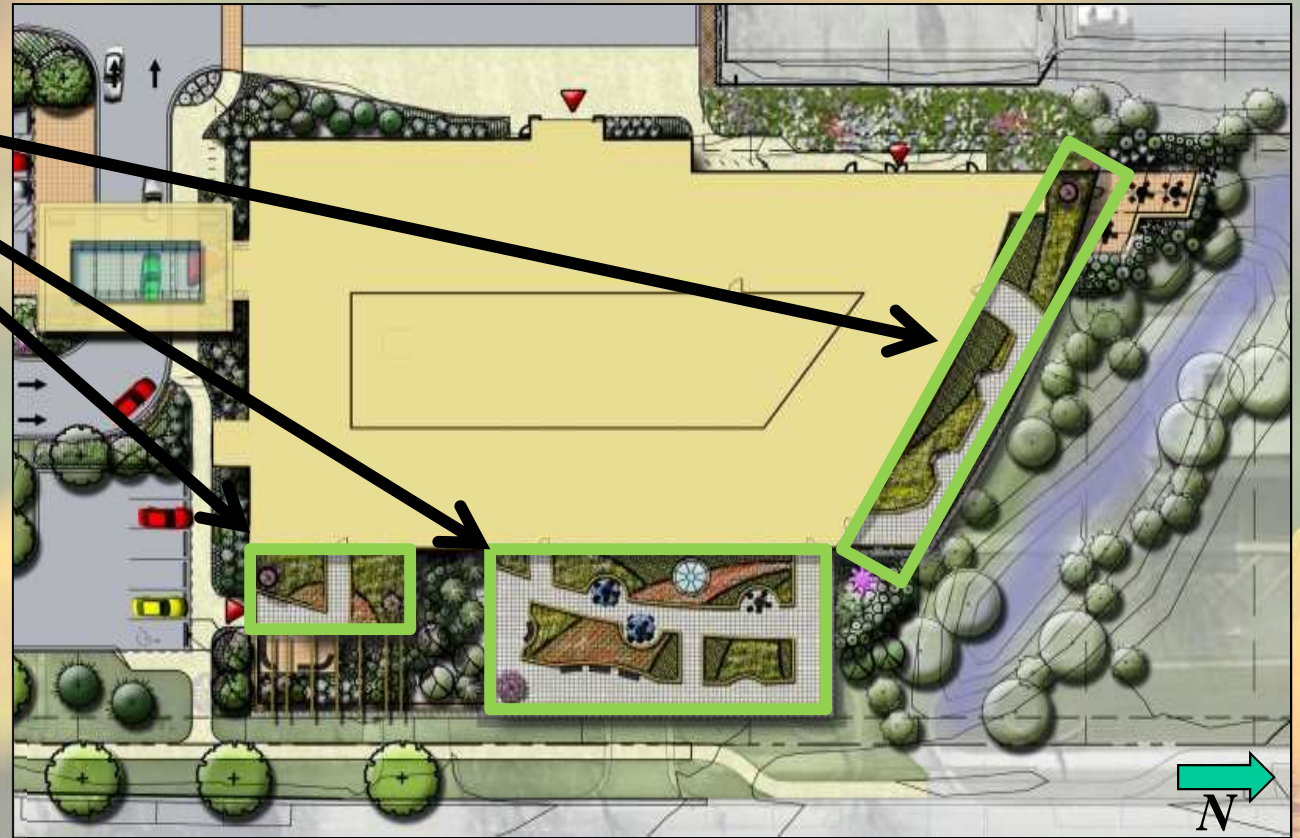
Installed Fall 2014



-- Low Impact Development Installations Cowell Family Cancer Center

Green Roofs

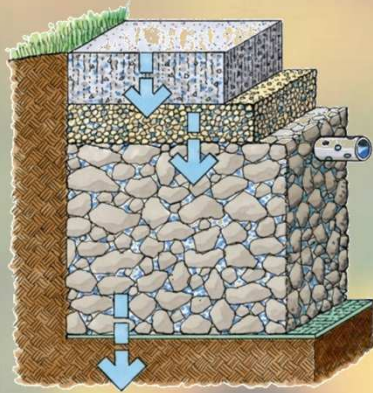
Planned Installed by
Fall 2015
Green Roof, Rain
Garden, Pervious
Pavement



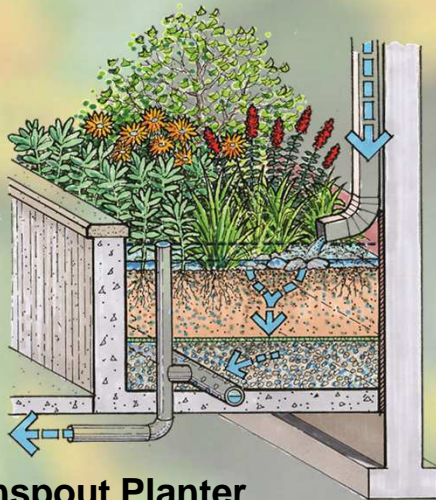
Green Roof
Diagram



-- Low Impact Development Installations MMC Building 29



Pervious Pavement
Diagram



Downspout Planter
Box Diagram

Planned Completion
by Fall 2015



Pervious
Pavement

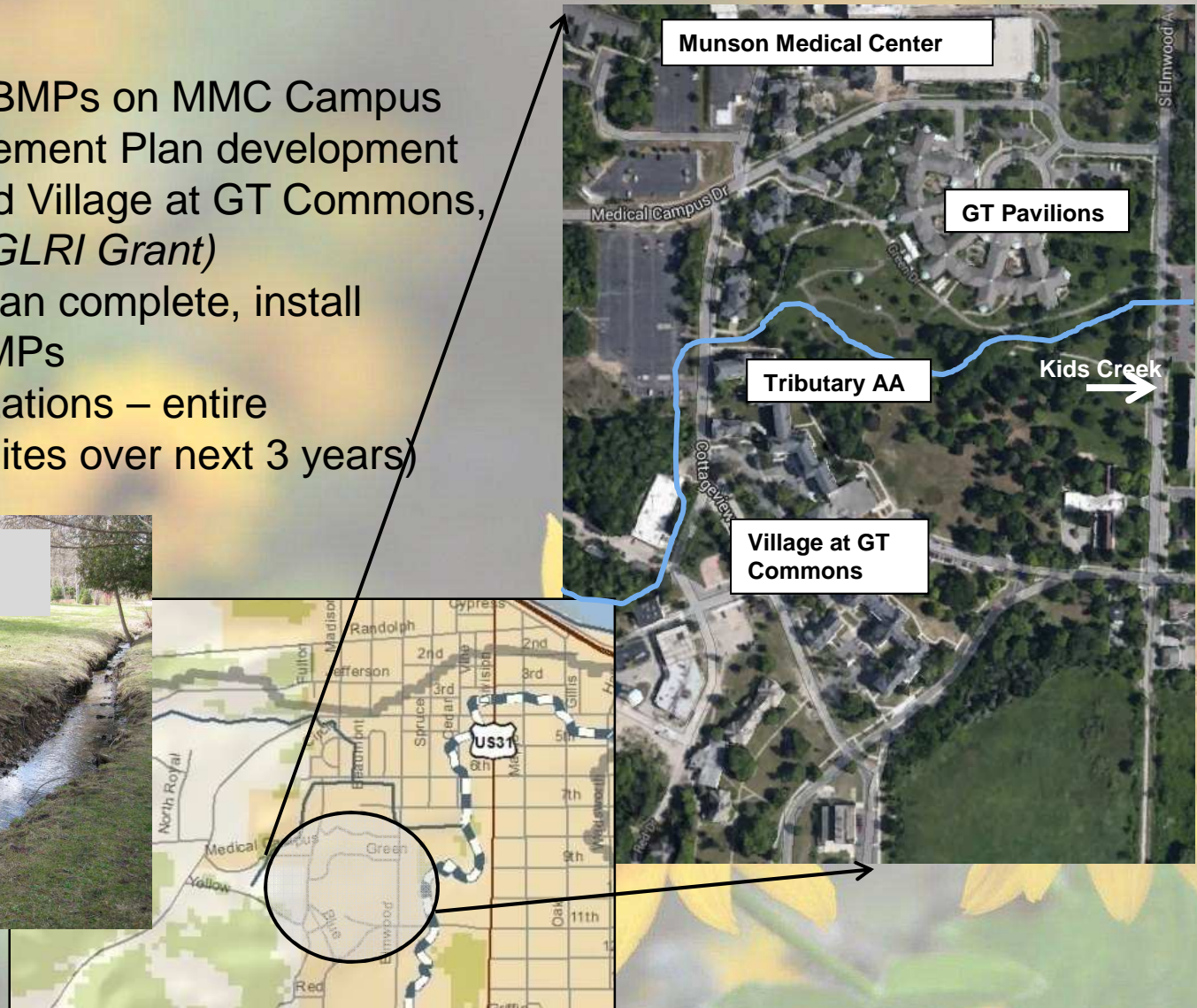
6 Downspout Planter
Boxes

Rain Garden

Kids Creek Restoration Project

Next Steps

- Complete planned BMPs on MMC Campus
- Stormwater Management Plan development for GT Pavilions and Village at GT Commons, Tributary AA area (*GLRI Grant*)
- Once stormwater plan complete, install identified priority BMPs
- Streambank stabilizations – entire subwatershed (30 sites over next 3 years)



Timeline of Partnerships

How did we do it?



Initial partnership formed with Munson Medical Center (MMC) for Kids Creek Daylighting project

Found common interest, although different reasons
Win-win situation

Grants for daylighting work also included Stormwater Management Plan Development for MMC

Got foot in the door
Extra work for free
Educate

They commit match,
we get grant money
Full project buy-in
Chose projects
MMC was already
doing, helped match

Grant applications to DEQ and foundations to implement BMPs in Stormwater Plan – MMC support and match was key to successful proposals and additional Foundation support

Successful model
with MMC, led to
further support

Discussion with MMC's adjacent landowners led to additional grant applications for Stormwater Master Plan development and BMPs there as well (*Village at GT Commons and GT Pavilions*)

Questions?



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Kids Creek Action Plan



DEQ researchers conducting stream assessment as part of Kids Creek TMDL development



DEQ Goal:

- Write a **TMDL (Total Maximum Daily Load Plan)** that will set limits on the amount of pollution the creek can handle

TWC Goal:

- Establish a detailed **Action Plan** to begin work on Kids Creek helping lead to removal from the impaired waters list
- DRAFT Completed, Finalized when TMDL completed by DEQ
- Start implementation immediately

Kids Creek Action Plan

Key Stakeholders:

- TWC, Grand Traverse Conservation District
- State Agencies: DEQ, DNR
- Local Gov't: City of TC, Garfield Twp
- Joint Recreational Authority
- Local Businesses and Residents



**Restoring our
community creek**

**Held community meetings to inform residents
and businesses of upcoming Action Plan**

You're Invited!
Kids Creek Restoration Public Meeting

Thursday, July 26

2 p.m.~for business owners

6 p.m.~for residents

**Traverse Bay Intermediate School District
1101 Red Drive, Traverse City**

Learn about how we're restoring Kids Creek to overcome
its water quality challenges. Come share your thoughts
and ask questions.


GRAND TRAVERSE BAY
13272 S. W. Bay Shore Dr.
Traverse City, MI 49684

NONPROFIT
ORGANIZATION
U.S. POSTAGE
PAID
TRAVERSE CITY, MI
PERMIT #96



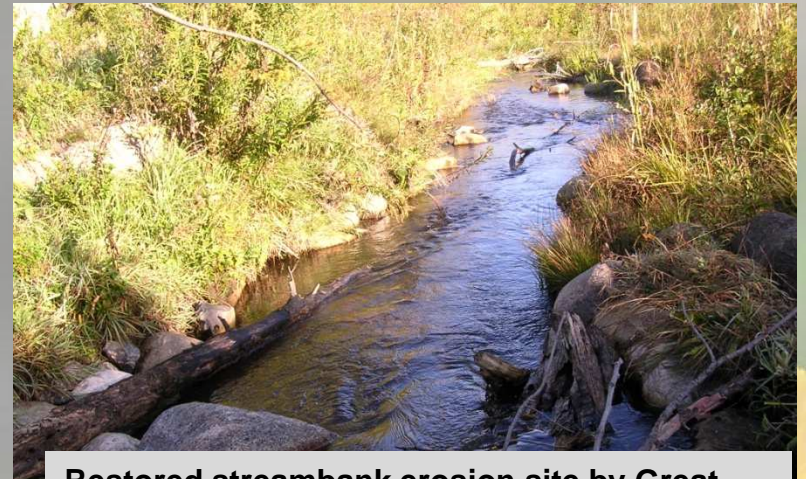
This Nonpoint Source Pollution Control project has been funded
wholly through the Michigan Nonpoint Source Program by the
United States Environmental Protection Agency under assistance
agreement 2009-0059 to the Watershed Center Grand Traverse Bay
for the Kids Creek and Grand Traverse Bay Watershed Water Quality
Solutions project.

Kids Creek Action Plan

The TMDL will set forth pollutant loading targets (or limits)... our Action Plan will answer the 'How will we get there?' question

Key Points of the Action Plan:

- Similar to a mini-watershed plan
- Work in conjunction with TMDL
(*pilot with DEQ to make TMDL more 'implementable'*)
- Support recommendations in GT Watershed Plan
- Identify and prioritize specific tasks aimed at reducing pollutants (i.e. stormwater)
- ID costs, partners, timeline, etc
- Focused on stormwater and sediment reduction



Restored streambank erosion site by Great Wolf Lodge



Eroding bank on Kids Creek behind Big Boy Restaurant

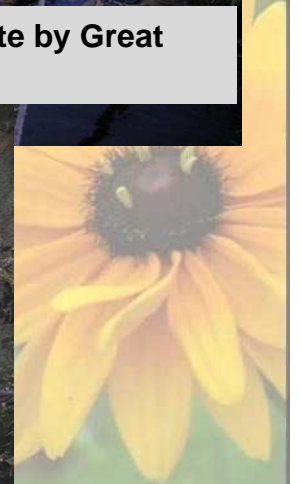


Figure 4: Site Map for Top Priority BMP Sites in Kids Creek Watershed

- **Site 1:**
West Front Primary Care
- **Site 1A:**
Parking Lot Adjacent to Site 1
- **Site 2:**
Munson Helipad Detention Basins
- **Site 3:**
Cottageview and Medical Campus Dr.
- **Site 4:**
Cottageview and Red Dr.
- **Site 6:**
Elmwood Ave. and State of MI Bldg
- **Site 7:**
GT Pavilions Grassy Area
- **Site 8:**
Cedar Run Rd. and N. Long Lake Rd.
- **Site 11:**
MMC Cancer Center
- **Site 12:**
MMC Main Bldg
- **Site 13:**
MMC Patient Parking
- **Site 14:**
MMC Bldg 29
- **Site 15:**
MMC Elmwood Ave. Rain Gardens



Priority Sites From Kids Creek Action Plan

Figure 4A: Site Map for Top Priority BMP Sites in Kids Creek Watershed

- **Site 5:**
14th St. Outfall
- **Site 9:**
Meijer Parking Lot
- **Site 10:**
Kids Creek Main Branch - Meijer to
Silver Lake Rd



Priority Sites From Kids Creek Action Plan

Streambank Erosion Sites - Kids Creek Watershed

Sub-basin	Severity	Cost
1	Severe: 5	\$10,000
	Moderate: 8	\$11,000
2	Severe: 3	\$3,000
	Moderate: 1	\$1,000
3	Severe: 3	\$15,000
	Moderate: 3	\$3,500
4	Severe: 1	\$1,000
	Moderate: 1	\$1,000
5	Severe: 0	--
	Moderate: 0	--
6	Severe: 0	--
	Moderate: 7	\$7,000
7	Severe: 5	\$4,000
	Moderate: 7	\$7,000
8	Severe: 1	\$500
	Moderate: 1	\$1,000
9	Severe: 0	--
	Moderate: 0	--
Total Cost		\$69,000

Priority Streambank Erosion Sites Identified in Kids Creek Action Plan